



**ARIZONA DEPARTMENT OF WATER RESOURCES**

**NON-EXEMPT WELL PERMIT**

**PURSUANT TO A.R.S. §§ 45-598 AND 45-599**

PERMIT NO. T-224084

STATE OF ARIZONA                     )  
  ) ss.  
COUNTY OF MARICOPA             )

This is to certify that Application No. T-224084 meets the requirements of A.R.S. §§ 45-598 and 45-599 for the construction of a new well. The Director hereby grants authority to the Permittee to construct and operate a non-exempt well, subject to the following limitations and conditions:

**Permit Limitations**

Permittee:                               City of Tucson/Tucson Water  
  PO Box 27210  
  Tucson, AZ 85726-7210

Well Registration Number:       55-224084                     File No. D (14-11) 27BBD

PERMIT NO. T-224084

Active Management Area:	Tucson
Sub-basin:	Avra Valley
Well Location:	The SE ¼ of the NW ¼ of the NW ¼ of Section 27, Township 14 South, Range 11 East of the GSRB&M
Depth:	920 ft.
Casing Material:	Steel
Casing Diameter:	20 inches
Maximum Pumping Capacity:	2500 gallons per minute
Maximum Annual Volume:	3000 acre-feet
Authorized Place of Use for Groundwater Withdrawn:	As Authorized by Right No. 58-110580.0009
Authorized Use of Groundwater:	As Authorized by Right No. 58-110580.0009
Latest Date for Completing Well:	August 1, 2016

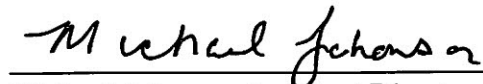
**Permit Conditions**

1. If the permitted well is not completed on or before **August 1, 2016**, the Permittee will be required to file a new application, and secure a new permit before proceeding with construction.
2. This permit is issued pursuant to A.R.S. § 45-599 and authorizes the permittee to construct a new well or a replacement well in a new location for the purpose of withdrawing groundwater for the use or uses set forth in the permit. This permit does not authorize the permittee to withdraw surface water from the well. If the permittee withdraws surface water from the well in any year, the permittee shall do so only pursuant to a decreed or appropriative surface water right and shall separately report in the annual report filed pursuant to A.R.S. § 45-632 the amount of groundwater and surface water withdrawn from the well.
3. The permittee shall monitor withdrawals of groundwater and shall report the total amount of groundwater withdrawn on an Annual Water Withdrawal and Use Report. The first annual reporting period shall be from the date of issuance of this permit through December 31, 2014. Subsequent annual reporting periods shall be from January 1 through December 31.

PERMIT NO. T-224084

4. The proposed well shall be constructed in accordance with the minimum well construction standards, pursuant to A.A.C. R12-15-811.
5. The issuance of the permit does not waive any federal, state, county or local government ordinances, regulations or permits for which the facility may have to comply.

WITNESS my hand and seal of office this 2<sup>nd</sup> day  
of December, 2014.

A handwritten signature in cursive script, reading "Michael Johnson", is written over a horizontal line.

Michael Johnson, Assistant Director

Run Date: 02/16/2016

## AZ DEPARTMENT OF WATER RESOURCES

### WELL REGISTRY REPORT - WELLS55

Location D 14.0 11.0 27 B B D Well Reg.No 55 - 224084 AMA TUCSON AMA

Registered Name CITY OF TUCSON/TUCSON WATER  
PO BOX 27210  
TUCSON AZ 85726

File Type NEW WELLS (INTENTS OR APPLICATIONS)  
Application/Issue Date 10/27/2014

Owner OWNER  
Driller No. 78  
Driller Name YELLOW JACKET DRILLING SERVICES, LLC  
Driller Phone 602-453-3252  
County PIMA  
Parcel No. 211-34-016C  
Intended Capacity GPM 2,500.00

Well Type NON-EXEMPT - RECOVERY  
SubBasin AVRA VALLEY  
Watershed SANTA CRUZ RIVER  
Registered Water Uses MUNICIPAL USES  
Registered Well Uses WATER PRODUCTION  
Discharge Method NO DISCHARGE METHOD LISTED  
Power NO POWER CODE LISTED

Well Depth	0.00	Case Diam	0.00	Tested Cap	0.00
Pump Cap.	0.00	Case Depth	0.00	CRT	
Draw Down	0.00	Water Level	0.00	Log	
		Acres Irrig	0.00	Finish	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments PWS ID 10-112

#### Current Action

2/16/2015 555 DRILLER & OWNER PACKETS MAILED  
Action Comment: sm

#### Action History

8/13/2015 602 PERMIT ISSUED (74)  
Action Comment: JRN  
8/13/2015 865 CHANGE OF DRILLER RECEIVED  
Action Comment: sm  
8/13/2015 555 DRILLER & OWNER PACKETS MAILED  
Action Comment: JRN  
8/13/2015 550 DRILLING AUTHORITY ISSUED  
Action Comment: JRN  
2/24/2015 867 APP/NOI HYDRO/WATER QUALITY REVIEW COMPLETE  
Action Comment: dgc  
2/16/2015 550 DRILLING AUTHORITY ISSUED  
Action Comment: sm  
2/16/2015 865 CHANGE OF DRILLER RECEIVED  
Action Comment: sm  
11/24/2014 867 APP/NOI HYDRO/WATER QUALITY REVIEW COMPLETE  
Action Comment: dgc  
10/30/2014 866 APP/NOI SENT TO HYDRO/WATER QUALITY REVIEW  
Action Comment: sm  
10/27/2014 320 APP RCVD FOR A RECOVERY WELL PERMIT (74)  
Action Comment: JRN



**ARIZONA DEPARTMENT OF WATER RESOURCES**  
3550 North Central Avenue, Second Floor  
Phoenix, Arizona 85012

**REISSUE**

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-224084**

AUTHORIZED DRILLER: **YELLOW JACKET DRILLING SERVICES, LLC**

LICENSE NO: **78**

NOTICE OF INTENTION TO DRILL NON-EXEMPT - RECOVERY WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **CITY OF TUCSON/TUCSON WATER PO BOX 27210 TUCSON, AZ, 85726**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

**SE 1/4 of the NW 1/4 of the NW 1/4 Section 27 Township 14.0 SOUTH Range 11.0 EAST**

NO. OF WELLS IN THIS PROJECT: **1** ASSESSOR'S PARCEL NO: **211-34-016C**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **August 1, 2016**

*Sela Muriello*

**GROUNDWATER PERMITTING AND WELLS**

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.



**ARIZONA DEPARTMENT *of* WATER RESOURCES**

3550 North Central Avenue, Second Floor

Engineering and Permits Division

Phoenix, AZ 85012

602-771-8500

**NOTICE TO WELL DRILLERS**

**This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.\* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:**

**ARIZONA REVISED STATUTE (A.R.S.)**

**A.R.S. § 45-592.A.**

**A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.**

**\*\*\***

**A.R.S. § 594.A.**

**The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.**

**\*\*\***

**A.R.S. § 600.A**

**A well driller shall maintain a complete and accurate log of each well drilled.**

**ARIZONA ADMINISTRATIVE CODE (A.A.C.)**

**A.A.C. R12-15-803.A.**

**A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.**

**\*\*\***

**A.A.C. R12-15-810.A.**

**A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.**

**\*\*\***

**A.A.C. R12-15-816.F.**

**In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.**

**\* THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION,  
GEOTECHNICAL OR HEAT PUMP BOREHOLES**



Arizona Department of Water Resources  
Water Management Division  
P.O. Box 36020 Phoenix, Arizona 85067-6020  
(602) 771-8527 • www.azwater.gov

## Request to Change Well Information

- ❖ Review instructions prior to completing form in black or blue ink.
  - ❖ You must include with your Notice:
    - check or money order for any required fee(s)
  - ❖ Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104
- \*\* PLEASE PRINT CLEARLY \*\***

FEB 16 2016

SA-012A

FILE NUMBER  
**D(14-11)27 BBD**  
WELL REGISTRATION NUMBER  
**55 - 224084**

### SECTION 1. REGISTRY INFORMATION

<b>Well Owner</b>		<b>Location of Well</b>					
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL <b>City of Tucson/Tucson Water</b>		WELL LOCATION ADDRESS (IF ANY) <b>2825 S. Sandario Rd</b>					
MAILING ADDRESS <b>P.O. Box 27210</b>		TOWNSHIP (N/S) <b>14 S</b>	RANGE (E/W) <b>11 E</b>	SECTION <b>27</b>	160 ACRE <b>NW ¼</b>	40 ACRE <b>NW ¼</b>	10 ACRE <b>SE ¼</b>
CITY / STATE / ZIP CODE <b>Tucson, AZ 85726-7210</b>		LATITUDE <b>32 °</b> Degrees		<b>11 '</b> Minutes	<b>12.9 "N</b> Seconds	LONGITUDE <b>111 °</b> Degrees	
CONTACT PERSON NAME AND TITLE <b>Chuck Faas Hydrologist</b>		METHOD OF LATITUDE/LONGITUDE (CHECK ONE) <input type="checkbox"/> USGS Quad Map <input type="checkbox"/> Conventional Survey <input checked="" type="checkbox"/> *GPS: Hand-Held		<input type="checkbox"/> *GPS: Survey-Grade			
TELEPHONE NUMBER <b>(520) 837-2231</b>		FAX <b>(520) 791-3293</b>		*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE) <input checked="" type="checkbox"/> NAD-83 <input type="checkbox"/> Other (please specify):			
		COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK <b>211</b> MAP <b>34</b> PARCEL <b>016C</b>		COUNTY WHERE WELL IS LOCATED <b>Pima</b>			

### Type of Request (CHECK ONE)

- ☒ Change of Well Drilling Contractor (Fill out Section 2) ☐ Change of Well Ownership (Fill out Section 3) ☐ Change of Well Information (location, use, etc.) (Fill out Section 4)

### SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR

**FEE \$120 per Well**

- ♦ If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

<b>Current Well Drilling Contractor</b>		<b>New Well Drilling Contractor</b>	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL <b>Tucson Water Operations</b>		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL <b>Yellow Jacket Drilling Services, LLC</b>	
DWR LICENSE NUMBER <b>388</b>		DWR LICENSE NUMBER <b>78</b>	ROC LICENSE CATEGORY <b>A-04</b>
TELEPHONE NUMBER <b>(520) 791-2689</b>	FAX <b>(520) 791-3293</b>	TELEPHONE NUMBER <b>(602) 453-3252</b>	FAX <b>(602) 453-3258</b>

### SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP

**FEE \$30 per Well**

<b>Previous Well Owner</b>		<b>New Well Owner</b>	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

### SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

**NOTE:** Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

### SECTION 5. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

- ☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. (See instructions.)

### SECTION 6. WELL OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE

**Wally Wilson Chief Hydrologist**

SIGNATURE OF WELL OWNER

*Wally Wilson*

DATE

**2/1/2016**

**Arizona Department of Water Resources**

3550 N Central Ave.

Phoenix AZ 85012

Customer:

CITY OF TUCSON - TUCSON  
WATER  
PO BOX 27210  
TUCSON, AZ 85726-7210

Receipt #: 16-43823

Office: MAIN OFFICE

Receipt Date: 02/16/2016

Sale Type: IN\_PERSON

Cashier: WRSAM

Item No.	Index	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
81920	15239	4439-TT	CHANGE OF WELL DRILLER CONTRACTOR OR REISSUE	224084	1	120.00	120.00
<b>RECEIPT TOTAL:</b>							<b>120.00</b>

Payment type: CREDIT CARD

Amount Paid: \$120.00

Payment Received Date: 02/16/2016

Notes: FROM TTA. Paid with Chuck Faas's Credit Card

Authorization 157766896

## Transaction Receipt

Arizona Water Resources  
Arizona Water Resources  
MID:347501639533  
1700 W Washington St  
Phoenix , AZ 85012  
602-771-8454

---

02/16/2016 04:29PM  
Remittance ID  
Arizona021616182744238Mur  
Transaction ID:  
157766896

---

CHUCK FAAS  
310 Alameda  
TUCSON, Arizona 85726  
United States  
Visa - 5540  
Approval Code: 061962

---

Sale  
Amount: \$360.00

---

55-224082 - 55-224803 - 55-224804  
N/A  
Time-Tracking  
0  
samurillo@azwater.gov

---

Cardmember acknowledges  
receipt of goods and/or  
services in the amount of  
the total shown hereon and  
agrees to perform the  
obligations set forth by the  
cardmember's agreement with  
the issuer.

Signature

Phone Order

[click here](#) to continue.

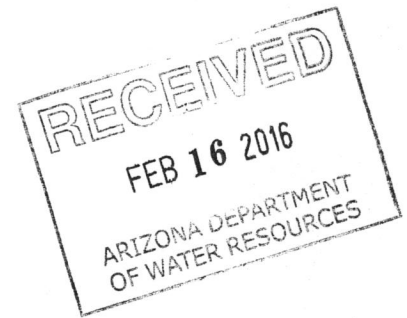


CITY OF  
TUCSON

TUCSON WATER  
DEPARTMENT

February 1, 2016

Stella Murillo  
Arizona Department of Water Resources  
Water Management Division  
P.O. Box 36020  
Phoenix, AZ 85067-6020



**Subject: Submittal of Three Requests to Change Well Drilling Contractor**

Dear Ms. Murillo:

Please find attached three applications to Change Well Drilling Contractor. The new driller for the wells is Yellow Jacket Drilling with an ADWR license number of 78. The application fees will be paid with a VISA credit card. Please contact Chuck Faas at (520) 837-2231 or cell number (520) 349-3356 for credit card information upon receipt of this application.

This transmittal pertains to the following wells:

<u>Well Name</u>	<u>Well Location</u>
AV-020B	D (14-11) 28 BCA
SA-012A	D (14-11) 27 BBD
SA-013A	D (14-11) 28 CAC

If you have any questions regarding the Request to Change Drilling Contractor application, please direct your inquiry to Chuck Faas at (520) 837-2231

Sincerely,

Wally Wilson  
Chief Hydrologist

Attachments

cc: Chuck Faas  
Pete Schmucker  
Well File

WW:klb



RESEARCH AND TECHNICAL SUPPORT • P.O. BOX 27210 • TUCSON, AZ 85726-7210  
(520) 791-2689 • FAX (520) 791-3293 • TTY (520) 791-2639 • [www.cityoftucson.org](http://www.cityoftucson.org)



ARIZONA DEPARTMENT OF WATER RESOURCES  
WATER MANAGEMENT DIVISION  
3550 N. Central Avenue, Phoenix Arizona 85012

THIS AUTHORIZATION SHALL BE IN THE POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-224084

PERMIT NO. 74-211288.0002

AUTHORIZED DRILLER: TUCSON WATER OPERATIONS

LICENSE NO: 388

A NOTICE OF INTENTION TO DRILL A NEW NON-EXEMPT WELL INSIDE THE TUCSON ACTIVE MANAGEMENT AREA  
HAS BEEN GRANTED TO:

WELL OWNER: CITY OF TUCSON – TUCSON WATER PO BOX 27210 TUCSON, AZ 85726-7210

The well(s) is/are to be located in the:

SE $\frac{1}{4}$  of the NW $\frac{1}{4}$  of the NW $\frac{1}{4}$  of Section 27, Township 14 South Range 11 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1<sup>st</sup> DAY OF AUGUST, 2016.

*Stella Murrells*

GROUNDWATER PERMITTING AND WELLS UNIT

THE DRILLER MUST FILE A LOG OF THE WELL  
WITHIN 30 DAYS OF COMPLETION OF DRILLING





## Stella A. Murillo

---

**From:** Chuck Faas <Chuck.Faas@tucsonaz.gov>  
**Sent:** Thursday, October 29, 2015 9:34 AM  
**To:** Stella A. Murillo  
**Subject:** Well Permits

Stella,

Per our phone conversation we would like at least a three month extension on the drilling permits for wells 55-224084, 55-224083 and 55-224082 due to lack of driller availability. We are going out to bid to drill these wells and we have been told by all prospective bidders it may be months before they could have a rig available. I think we could have the wells completed before August 2016 barring any problems. If you have any questions please contact me.

Thanks

Chuck

ARIZONA DEPARTMENT OF WATER RESOURCES  
WATER MANAGEMENT DIVISION  
3550 N. Central Avenue, Phoenix Arizona 85012

THIS AUTHORIZATION SHALL BE IN THE POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-224084

PERMIT NO: 74-211288.0002

AUTHORIZED DRILLER: Tucson Water Operations

LICENSE NO: 388

A NOTICE OF INTENTION TO DRILL A NEW NON-EXEMPT WELL INSIDE THE TUCSON ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: City of Tucson P.O. Box 27210 Tucson, AZ 85726

The well is to be located in the:

SE $\frac{1}{4}$  of the NW $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Section 27, Township 14 (South), Range 11(East)

No. of wells in this project: 1

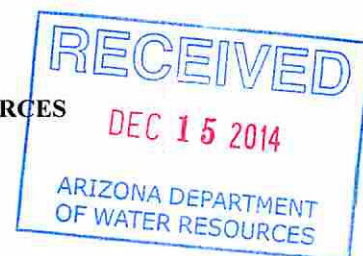
THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 31<sup>st</sup> DAY OF March, 2016.

  
WATER MANAGEMENT DIVISION

THE DRILLER MUST FILE A LOG OF THE WELL  
WITHIN 30 DAYS OF COMPLETION OF DRILLING



ARIZONA DEPARTMENT OF WATER RESOURCES  
Water Management Division  
3550 North Central Ave, 2<sup>nd</sup> Floor  
Phoenix, Arizona 85012-2105  
Phone (602) 771-8500 Fax (602) 771-8689



APPLICATION FOR A RECOVERY  
WELL PERMIT (§ 45-834.01)

The initial fee for an application for a Recovery Well Permit is \$1,000. Total fees for this application are based upon an hourly billable rate, which can be found on the ADWR web site @www.azwater.gov. If the costs of reviewing your application exceed \$1,000, you will be invoiced for the difference, up to a maximum total fee of \$10,000. Payment may be made by cash, check, or credit card (if you wish to pay by credit card, please contact the Groundwater Permitting Program at 602-771-8527). Checks should be made payable to the Arizona Department of Water Resources. In addition to the hourly application fee, the applicant must pay any review-related costs associated with the application and the actual cost of mailing or publishing any legal notice of the application or any notice of a pre-decision administrative hearing on the application. Review-related costs are: (1) costs associated with a pre-decision hearing on the application, such as court reporter services and facility rentals for the hearing, and (2) mileage expenses for a site visit conducted before issuing a decision on the application. **Failure to enclose the initial application fee will cause the application to be returned. Fees for an application for a Recovery Well Permit are authorized by A.R.S. § 45-871.01 and A.A.C. R12-15-103.**

FOR OFFICE USE ONLY

Application No.: 74-211288.0002  
Date Received: Dec 15, 2014

PLEASE SUBMIT ONE ORIGINAL AND TWO COPIES OF THE  
COMPLETED APPLICATION AND ALL SUPPORTING MATERIALS.

SA-013A

1. Name of Applicant: City of Tucson/Tucson Water

<u>P.O. Box 27210</u>	<u>Tucson</u>	<u>AZ</u>	<u>85726-7210</u>
Mailing Address	City	State	Zip
Contact Person <u>Wally Wilson</u>	Telephone <u>(520) 837-2239</u>	Fax <u>(520) 791-3293</u>	

2. Name of Active Management Area or Irrigation Non-Expansion Area if applicable, and name of groundwater basin and subbasin where the facility will be located Tucson Active Management Area

3. Name of the owner(s) of the land where wellsites are located City of Tucson

Mailing Address \_\_\_\_\_  
(If more than one owner, attach a list showing corresponding land owner and well registration number(s)).

4. Legal description of the land where water will be used Customers within the Tucson Water Service Area

STATE OF ARIZONA  
DEPARTMENT OF WATER RESOURCES  
WATER MANAGEMENT DIVISION  
MAIL TO: P.O. BOX 36020, PHOENIX, ARIZONA 85067-6020  
3550 North Central Avenue, Phoenix, Arizona 85012  
Phone (602) 771-8500 • Fax (602) 771-8690



**APPLICATION FOR A PERMIT TO DRILL OR OPERATE A NON-EXEMPT  
WELL WITHIN AN ACTIVE MANAGEMENT AREA PURSUANT TO A.R.S. § 45-599**

**I. INSTRUCTIONS:**

1. This application should be used to obtain a permit to:
  - (a) Drill a non-exempt well in conjunction with a new or existing General Industrial Use Permit Application, a Certificate of Grandfathered Right, a Service Area Right, or an Irrigation District Right.
  - (b) Convert an existing well to a non-exempt well, or increase the annual permitted volume to be withdrawn from the well.
2. Complete all appropriate items on this application, sign in the appropriate place and mail to P.O. Box 33589, Phoenix, Arizona 85067-3589 or hand deliver to 3550 North Central Avenue, Phoenix, Arizona 85012
3. Pursuant to A.R.S. § 45-599 and A.A.C. R12-15-104, the fee for this application is \$150.00 and the permit fee is \$30.00.

**II. GENERAL DATA:**

1. Applicant City of Tucson / Tucson Water  
Mailing Address P.O. Box 27210  
Tucson AZ 85726-7210  
City State Zip Code  
Contact Person Chuck Faas  
Telephone Number (520) 837-2231

FOR DEPARTMENT USE ONLY	
Application No.	<u>7-224084</u>
Registration No.	<u>55-224084</u>
File No.	<u>D(14-11)27BBD</u>
Date Received	<u>10/27/14</u>
AMA	<u>Tucson</u>
W/S	<u>09</u> S/B <u>16</u>

2. Name of Land Owner City of Tucson / Tucson Water  
Mailing Address Same as above

2B. Parcel No. 211-34-016C  
2C. Public Water System ID # 10-112

City State Zip Telephone Number

3. Applicant is: ☒ Owner ☐ Lessee
4. Proposed well is: ☒ New well ☐ Increase in Permitted Maximum Annual Volume for Existing Well ☐ Replacement well in a new location.
5. Claim of entitlement to withdraw groundwater is based upon:  
☒ Certificate of Grandfathered Right No: 58-110580.0009  
☐ General Industrial Use Permit No. 59-  
☐ Service Area Right No:  
☐ Irrigation District Right No:

6. The principal use(s) of groundwater will be (be specific) All ancillary uses pertinent to a municipal water provider.
7. Well location: SE 1/4 NW 1/4 NW 1/4 Section 27 Township 14 S N/S Range 11 E E/W  
10 Acre 40 Acre 160 Acre
8. Position location of the well: Latitude 32 ° 11 ' 12.9 " N Longitude 111 ° 12 ' 55.9 " W
9. Design Pump Capacity 2500 gpm Depth 920 feet  
Diameter 20 inches Type of casing Steel
10. Proposed annual volume of water 3000 acre feet
11. Well is located in the Avra Valley subbasin of the Tucson Active Management Area.



12. Approximate date construction will begin: MONTH January YEAR 2015

Estimated time to complete new well 1 Month. (If longer than 1 year, attach explanation.)

13. Legal description of the land where the groundwater will be used: **Within the Tucson Water Service Area**  
10 Acre 40 Acre 160 Acre  $\frac{1}{4}$   $\frac{1}{4}$   $\frac{1}{4}$  Section        Township        N/S Range        E/W. County       

14. Is the proposed well site within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? ☐ Yes ☒ No (if yes, a request for a variance must accompany this application pursuant to R12-15-820.)

15. Driller's Name Tucson Water Operations DWR License No: 388 ROC License Category       

Mailing Address: P.O. Box 27210 Tucson AZ 85726-7210 (520)791-2689  
Street City State Zip Telephone Number

16. Attach a Well Construction Supplement, DWR form 55-90, and include a detailed construction diagram as indicated on the form.

**III. FOR SERVICE AREA WELLS AND IRRIGATION DISTRICT WELLS ONLY:**

17. Is the proposed well located in your service area? ☐ Yes ☐ No

18. Will groundwater withdrawn be used in your service area? ☒ Yes ☐ No **(If answer is no, attach explanation.)**

**IV. FOR REPLACEMENT WELL IN NEW LOCATION ONLY:**

19. Registration number of original well 55-       .

20. Location of the original well:         $\frac{1}{4}$          $\frac{1}{4}$          $\frac{1}{4}$  Section        Township        N/S Range        E/W  
10 Acre 40 Acre 160 Acre

21. Distance between original well and proposed replacement well        feet.

22. When determining impacts under the Department's well spacing rules, the director will take into account the collective efforts of reducing or terminating withdrawals from the well being replaced combined with the proposed withdrawals from the replacement well if the applicant submits a hydrological study demonstrating those collective effects to the satisfaction of the director.

Will a hydrological study be submitted? ☐ Yes ☐ No

23. Will the original well be abandoned if applicant receives a permit to drill a replacement well? ☐ Yes ☐ No.

**(If yes, please submit a completed Notice of Intent to Abandon a Well along with this application.)**

If no, explain the planned use of the original well       

**V. FOR INCREASE IN PERMITTED MAXIMUM VOLUME FOR EXISTING WELL ONLY:**

24. Registration number of the existing well 55-        Present pump design capacity        gallons per minute. Present permitted volume        acre-feet per year.

25. The new design pump capacity will be        gallons per minute. New permitted volume will be        acre-feet per year.

26. Will the well be modified or deepened? ☐ Yes ☐ No [Pursuant to R12-15-801(29)] **If yes, Attach a Well Construction Supplement, DWR form 55-90, and include a detailed construction diagram as indicated on the form.**

27. The existing well has previously been used in conjunction with or for the following:       

It is understood that the permit, if granted, will be in accordance with the Groundwater Management Act (Title 45, Chapter 2), and the rules adopted thereunder. The permittee will be bound by the provisions of such law and the provisions of the permit issued.

I (we), Wally Wilson Chief Hydrologist hereby affirm that all information provided in this application is true and correct to the best of my/our  
(print name) knowledge and belief.

Signature of Applicant Wally Wilson Date 10/15/2014

Signature of Land Owner (if applicable) Wally Wilson Date 10/15/2014

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT DIVISION

3550 North Central Avenue, Phoenix, Arizona 85012

Phone (602) 771-8585 Fax (602) 771-8688

SA-012A

WELL CONSTRUCTION SUPPLEMENT (form DWR 55-90)

Well Registration Number 55- 224084

1. Well Location:

SE ¼ of the NW ¼ of the NW ¼, Sec. 27, Township 14 S Range 11 E.  
10AC 40AC 160AC

2. Position Location of the Well:

Latitude 32° 11' 12.9" Longitude 111° 12' 55.9"

Datum: ☒ NAD 83 ☐ NAD 27 • Other: \_\_\_\_\_

3. County Pima

4. Date construction to start: January 2015

5. Time period well will remain in use: Indefinitely

6. Is pump equipment to be installed? Yes If so, design pump capacity: 2500 GPM.

7. Well construction plan:

a. Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b. Borehole diameters 46 inches from 0 feet to 40 feet.  
28 inches from 40 feet to 920 feet.

c. Casing materials Steel

d. Method of well development (bail, air lift, surge, etc.) Surge

e. Will surface or conductor casing extend above grade? Yes

8. Include a detailed construction diagram of the proposed well design. The diagram should verify consistency with minimum construction requirements specified in the Department's well construction rules found in Arizona Administrative Code (A.A.C.) R12-15-801 et seq. Specifically, the diagram should include borehole diameters; casing materials and diameters; perforation intervals; the expected water level; depth and thickness of the surface seal; proposed grouting materials; and the length that the surface or conductor casing will extend above grade, or vault details, if specified.

Pursuant to Arizona Revised Statutes (A.R.S.) § 45-594.B, all well construction, replacement, deepening and abandonment operations shall comply with the rules adopted pursuant to this section. Therefore, any existing well that is deepened or modified must be brought into compliance with minimum well construction standards specified above, if not already in compliance.

9. Proposed materials and method of abandonment if well is to be abandoned after project is completed (Minimum requirements per A.A.C. R12-15-816):

N/A

10. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material, or petroleum storage area or tank? \_\_\_\_ Yes ☒ No

11. Is this well to monitor existing contamination? \_\_\_\_ Yes ☒ No

Potential contamination? \_\_\_\_ Yes ☒ No If yes, please provide explanation: \_\_\_\_\_

12. Name of Consulting firm, if any: \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Contact Person: \_\_\_\_\_ Telephone Number: \_\_\_\_\_

13. Drilling firm Tucson Water Operations

DWR License Number: 388 ROC License Category: \_\_\_\_\_

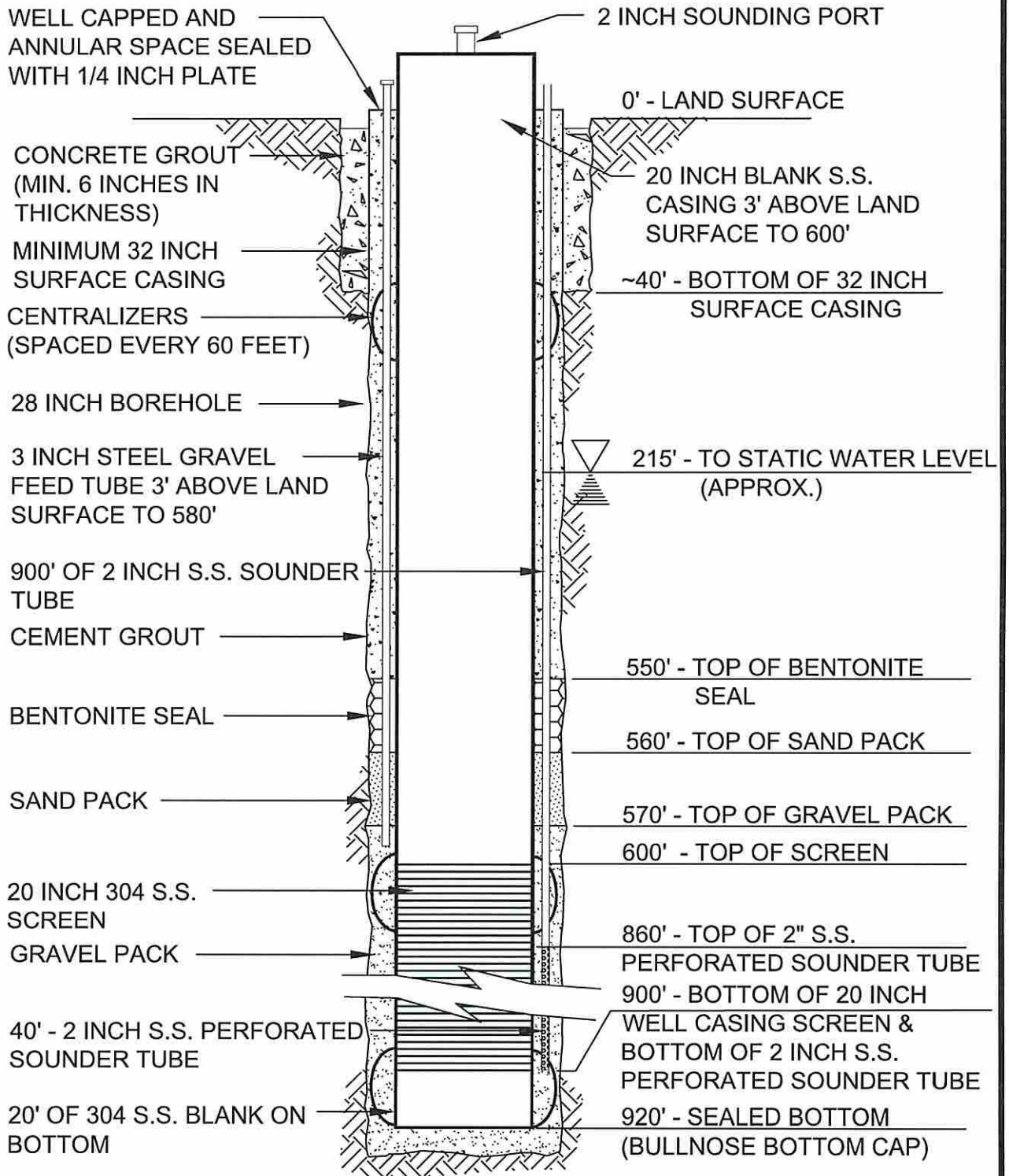
14. Special construction standards, if any, required pursuant to A.A.C. R12-15-821: \_\_\_\_\_

I (we), Wally R. Wilson hereby affirm that all information provided in this  
(print name) application is true and correct to the best of my/our  
knowledge and belief.

Signature of Applicant  Date 10/15/2014



# CASING, GRAVEL AND GROUT PLACEMENT



## WELL CONSTRUCTION DETAIL WELL SA-012A

DATE: 10/2014

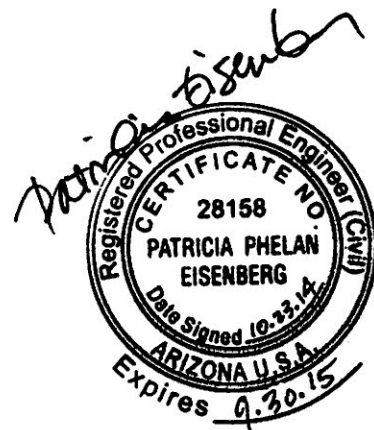
SCALE: NOT TO SCALE



**PROJECTED IMPACT FOR  
THREE PROPOSED WATER-SUPPLY WELLS  
AV-020B SA-012A SA-013A  
FOR  
CITY OF TUCSON**

By

Tucson Water  
Planning & Engineering Division  
Water Resources Management



October 15, 2014



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## INTRODUCTION

The purpose of this report is to evaluate the potential hydrologic impact of three proposed City of Tucson municipal supply wells on the local aquifer system. The well names and locations of the three proposed wells are as follows:

<u>Well Name</u>	<u>Location</u>
AV-020B	D(14-11)28 BCA
SA-012A	D(14-11)27 BBD
SA-013A	D(14-11)28 CAC

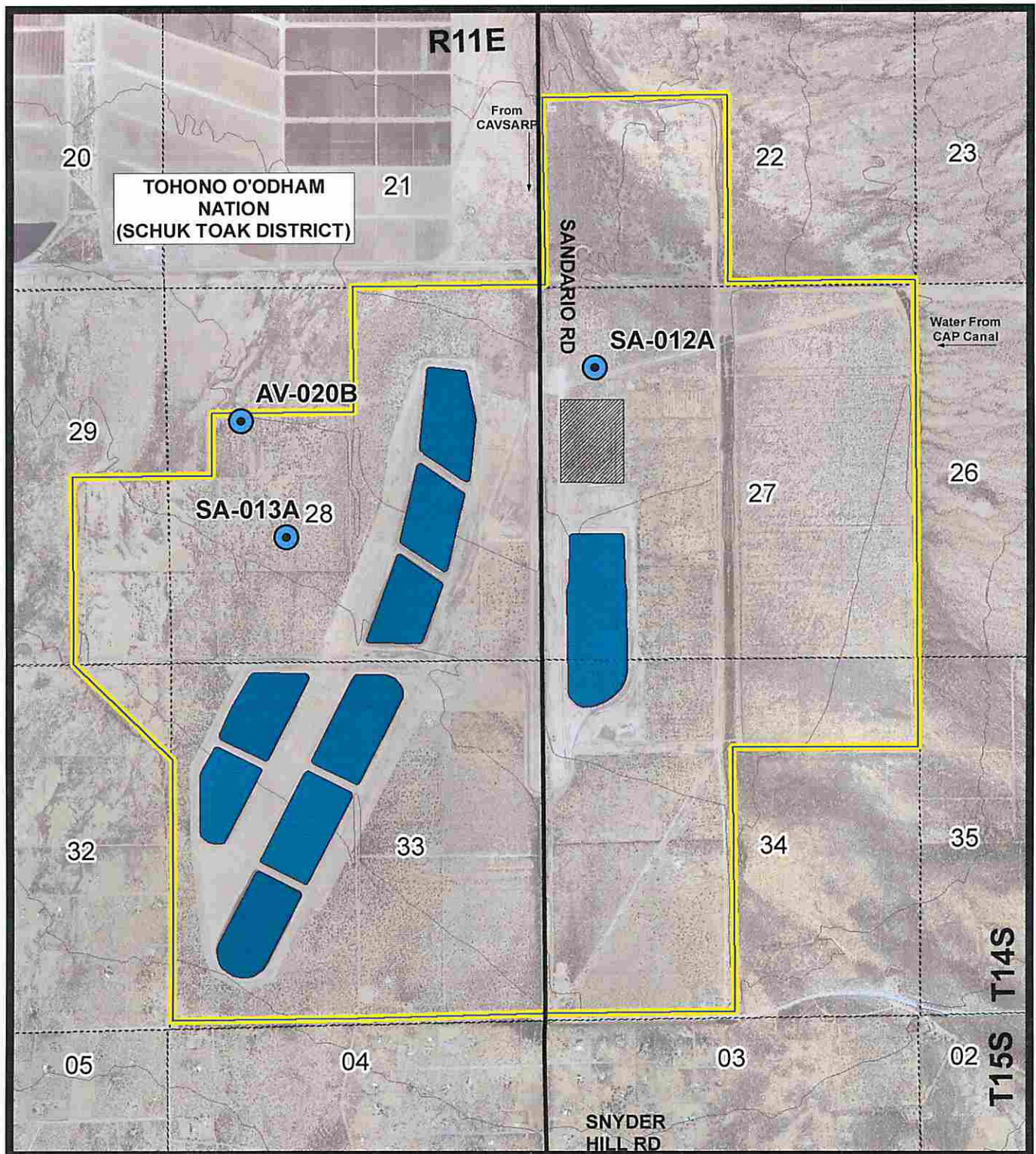
The location of these proposed wells are shown on Figure 1. The City of Tucson plans to drill these wells under a Type II Non-Irrigation Grandfathered Water Right Certificate (number 58-110580.0009).

## HYDROLOGIC CONDITIONS

The proposed well site is located within the alluvial sediments in the south-central part of Avra Valley. Ground water in the area results from precipitation which occurs in the higher elevations of the Avra Valley and Altar Valley watershed. The direction of ground-water flow is generally to the northwest (Tucson Water, 2007).

The proposed wells are located within Tucson Water's Southern Avra Valley Recharge Project (SAVSARP) groundwater recharge facility. The facility consists of nine recharge basins of various sizes for combined total of about 230 acres of recharge basins. The proposed well locations within the SAVSARP recharge facility and their proximity to the recharge basins are shown on Figure 1.

Water levels fluctuate due to effects associated with SAVSARP recharge and recovery operations. The depth to water near the proposed wells is about 215 feet below land surface based on nearby monitoring wells measured on September 4, 2014 (Tucson Water, 2014). From December 2006 to September 2014, the average rate of water-level change in the vicinity of the



**Figure 1 - SAVSARP Proposed Wells Site Plan  
(AV-020B, SA-012A, SA-013A)**

**Legend**



 SAVSARP Boundary

 Proposed Well

 Recharge Basin

 Reservoir and Booster Station

0 0.225 0.45 0.9 Miles





proposed wellsites is estimated to be approximately 26 feet of rise per year (Tucson Water, 2014). This estimate of water level change is based on water levels measured at nearby Tucson Water wells located near the proposed wells.

### AQUIFER PARAMETERS

MODFLOW 2005 was used to construct a 4800 active cell, three layer impact model designed to function as a selected fraction of the domain of the ADWR Tucson Active Management Area (TAMA) model (Mason and Hipke, 2013). The selected model area was centered over the location of the Southern Avra Valley Recharge Project (SAVSARP) facility. The aquifer parameters selected for this hydrologic impact analysis were derived from the hydraulic conductivity and storage values of the TAMA model. Additionally, the produced hydraulic head gradient at the end of the last stress period of the TAMA model was used to derive the water table elevations and the north-northwest natural groundwater flow near the proposed well locations. However, as SAVSARP has undergone intense recharge operations coupled with a low degree of recovery, groundwater flow is predominantly radial, moving away from the pronounced groundwater mound beneath the recharge basins.

To recreate the groundwater mound of the TAMA model, 151 cells in the top layer were designated for recharging 34,755.3 acre-feet of CAP water, equally distributed throughout the cells. This recharge value was derived from the net influx between the volume recharged and the volume withdrawn from the aquifer beneath SAVSARP during the last stress period of the TAMA model.

The goal of this process is to create a “base case” scenario, based off the last stress period of the TAMA model. Generally, a “base case” scenario describes a model that can be run under steady state conditions. However, the presence of intense anthropogenic recharge creates a highly dynamic system, where groundwater is going into storage, which thwarts the ability to make the last TAMA stress period a steady state condition. To remediate this issue, 52 general

head boundary conditions were imposed to line the perimeter of each layer of the impact model, for a total of 156 cells. The implementation of the numerous general head boundaries creates a groundwater mound that is static, permitting the impact model to be run under steady state conditions and ultimately creates a reproducible “base case” scenario. Parameter Estimation PEST was used to calibrate the conductance of each general head boundary and create a hydraulic head gradient and elevation distribution coincident with the TAMA model.

The hydraulic conductivity values of the model were distributed via geographically overlaying the TAMA grid over the impact model grid comprised of uniform cells with dimensions of 330 by 330 feet. Each impact model cell was granted the hydraulic conductivity value of the TAMA cell that intercepted the impact model cell’s centroid. The same process was followed to transfer the TAMA model’s heterogeneously distributed specific yield, recharge and the top and bottom elevations of each layer at each model cell.

Since AV-020B, SA-012A and SA-013A are recovery wells, the continued recharge of CAP water in the 9 existing recharge basins was input into the impact model. 115 cells within the model were designated as recharge cells to represent the aquifer impact of basins. A greater proportion of recharge was implemented within the southern modeled recharge cells to better represent the actual infiltrative efficiency of the southernmost three basins. The basins are expected to successfully recharge a total of 60,000 AF/yr according to facility operations completed in 2013.

### PROJECTED DEMAND

The projected demand for each proposed well based on normal usage will require an annual average pumping discharge rate (Q) of 3,000 AF/yr or 1859.88 gallons per minute (gpm). An average discharge rate of 1859.88 gpm for each well was therefore entered into the model, for a total of 5579.65 gpm.

The well spacing and well impact rules (R12-15-830) prescribed by ADWR require that the projected cumulative declines in water levels be calculated for the proposed well after the first five years of operation. This implies that the proposed well will be operated under a 100 percent

duty cycle (i.e. pumped continuously) for the first five years. The volume of water withdrawn each year under a 100 percent duty cycle is calculated below:

$$\begin{aligned}\text{Volume Withdrawn} &= 5579.65 * 60 \text{ min} * 24\text{hr} * 365 \text{ days} \\ \text{Per Year} &= 2.9327 \text{ billion gallons (9,000 acre-feet)}\end{aligned}$$

The operation of the wells on a 100 percent duty cycle is not a practical assumption due to fluctuating municipal demand and well maintenance requirements. However, by evaluating projected water-level declines under this mode, the analysis more closely approximates a worst-case condition.

Values of drawdown (after five years of pumping) for various distances from the proposed wells were calculated based on the theoretical effects of the proposed pumping well. The water-level declines associated with the proposed pumping wells were simulated through the implementation of simulated wells located at their proportionate distances from the recharge basins at SAVSARP. The proposed screening depth of the three wells is between 600 and 900 feet below surface, coincident with the majority of the existent drilled wells present at SAVSARP that directly intercept the groundwater mound. Consequently, the three wells are all located solely in the bottom layer of the model, and the resultant drawdown from the wells' operation is limited to the bottom layer.

The entire simulation was run for two stress periods. The first stress period represents a 365 day time period and simulates the steady-state condition of the facility, with 34,755.3 AF of modeled recharge to emulate the facility's actual net influx. The second stress period represents a 5-year time period and is run under transient conditions. 60,000 AF/yr of recharge and 3,000 AF/yr of recovery at each of the proposed wells are modeled within this stress period. The change in hydraulic head between the ends of the first and last stress periods represents the projected mounding and drawdown elicited by the simulated operation.



## PROJECTED IMPACT

The model predicted that after 1,825 days of pumping, the 10-foot drawdown contour would be non-existent at AV-020B and SA-013A. The modeled water table does not drop ten feet within the wells' casings. At SA-012A the model predicts the presence of 10-foot drawdown contour with a radius of 37 feet away from the well. This contour is well within the boundaries of the City of Tucson owned SAVSARP facility and too small to plot on Figure 1. As a result, the simulation predicted that the hydrologic impact from the operation of AV-020B, SA-012A and SA-013A would be completely contained within the SAVSARP facility; therefore, no non-City owned water production wells of record are within the prescribed area of hydrologic impact.

## REFERENCES

- Mason, Dale and Wesley Hipke. 2013. *Regional Groundwater Flow Model of the Tucson Active Management Area, Arizona: Modeling Report No. 24*. Arizona Department of Water Resources, Hydrology Division.
- Tucson Water, 2007. *2004 Groundwater level Basic Data Report for, Tucson and Avra Valley, Pima County, Arizona* Water Resources Management.
- Tucson Water, 2014. *Tucson Water Static Water Level Database*.

## **APPENDIX A**

### **LISTING OF REGISTERED WELLS IN THE STUDY AREA**

Arizona Department of Water Resources

3550 N Central Ave.

Phoenix AZ 85012

Customer:

CITY OF TUCSON / TUCSON  
WATER  
ATTN: CHUCK FAAS  
PO BOX 27210  
TUCSON, AZ 85726

Receipt #: 15-36418  
Office: MAIN OFFICE  
Receipt Date: 10/30/2014  
Sale Type: IN\_PERSON  
Cashier: WRSAM

Item No.	Index	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
70610	15245	4439-TT	Application for permit to drill non-exempt well in an active management area	224084	1	150.00	150.00
RECEIPT TOTAL:							150.00

Payment type: CREDIT CARD

Amount Paid: \$150.00

Payment Received Date: 10/30/2014

Authorization 126627270

Notes: FROM TTA.

**Refund:**

Request Date: 1/14/2015

Approved:

Request Notes: Refund is required; applicant resubmitted proposed wells on a recovery well application. Stella

Update Date:

Approved Notes:

Arizona Department of Water Resources

3550 N Central Ave.

Phoenix AZ 85012

Customer:

CITY OF TUCSON / TUCSON  
WATER  
ATTN: CHUCK FAAS  
PO BOX 27210  
TUCSON, AZ 85726

Receipt #: 15-36418  
Office: MAIN OFFICE  
Receipt Date: 10/30/2014  
Sale Type: IN\_PERSON  
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